



NEWSLETTER OF THE LONDON CHAPTER,
ONTARIO ARCHAEOLOGICAL SOCIETY
P.O. Box 2574, Station B, London, ON. N6A 4G9



November, 1992

92-7

The Bead Hill Site: A Late 17th Century Seneca Site in Metropolitan Toronto

Dana Poulton
D.R. Poulton & Associates Inc.

This month we move closer to home, southern Ontario, to hear about a post 1650 Iroquoian occupation. Very little is known of the later 17th century Iroquois occupations of the north shore of Lake Ontario, with Dana's work on this site representing the sum total of our knowledge of non-mortuary Seneca sites from this time, either for Ontario or New York State. So come on out and here about something slightly different (as opposed to the completely different Mexican and Scottish stuff of the last two months!). Meeting time is 8 PM, Thursday, November 12th, at the London Museum of Archaeology.

Next Month: On December 5th, Pat Weatherhead and Les Howard will host the Chapter's annual Christmas Party, at 302-261 Platt's Lane, starting at 6 PM. Get an early start on season's festivities!

Chapter Executive

ANNUAL RATES

Individual.....	\$15.00
Family.....	\$18.00
Institutional.....	\$21.00
Subscriber.....	\$17.00

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EXECUTIVE REPORT

Lots of information to pass along to members this month. First, we are pleased to report that London's LACAC has decided to designate the Norton site, a 15th century Iroquoian village located in Kensal Park. The decision to designate this site was based on the desire to protect it from future park alterations, etc., and to bring to London's attention the rich archaeological heritage in the city. London Chapter's representative on LACAC, Peter Timmins, played a large role in having the site designated. Peter also reports that the City of London is moving ahead towards establishing an archaeological master plan, based on the recommendations of LACAC. A first step will be to hire an archaeologist on a contract basis for this winter to help set the stage for the master plan study, hopefully commencing next year. Our congratulations go to Peter for a job well done, and we acknowledge the efforts of previous Chapter reps. Mike Gibbs and Bob Mayer, as well as Chapter member Bob Pearce, who have all played a role in bringing archaeological concerns forward in London's LACAC.

On other fronts, Members of the London Chapter and representatives from some of the other heritage groups at Grosvenor Lodge participated in an informal discussion with Dan Schneider of MCC on Monday, October 26th. The meeting was held to discuss the final report of the Minister's Advisory Committee (which includes OAS representation) on proposed revisions to the Heritage Act. While the revisions are important for all areas of Heritage in Ontario, the changes regarding archaeology (eg. automatic protection of archaeological sites, Crown ownership of artifacts, the development of standards for the care of artifacts, and the prohibition of the sale of artifacts, as well as Heritage Impact Assessments and revisions to licencing) should much improve the current state of archaeological conservation in the Province. No more Art Gallery fiascos under the new Act! Copies of the MAC report are available at Grosvenor Lodge or through the MCC office at 55 Centre Street.

Also, don't forget that the end of the year is coming up fast, and a new Chapter Executive will be needed for the 1993 year. Pat, Harri, Chris and Lorelyn have all offered to stand again, but there is additional room for up to two more directors. So if you want to be a part of the Chapter Executive, if you want to see the Chapter move in directions you believe in, its up to you to help direct where the Chapter goes. Please contact Neal Ferris (our nominating committee chair) at 432-2165 for more information.

As discussed previously, the London Chapter has offered its experience in hosting OAS conferences to help organize the 1993 OAS conference in a city other than Toronto, London or Ottawa. Cities such as Windsor, Waterloo or St. Catharines have been suggested, with Windsor as the first option at present. This would be done in co-operation with the local OAS Chapter, with an eye to help that Chapter generate a little revenue and local exposure. A final decision on location will be made by mid-November. Anyone willing to be a part of the organizing committee should contact a London Chapter Executive member.

In this issue of **KEWA**, members will find the 1991 Treasurer's Report. Sorry for the delay, but thanks to Harri Mattila for sorting out a real mess. Member's will note that we took in a lot of money last year, and spent a lot. Hopefully 1992 will continue the former trend, and not the latter!

Finally, the Chapter Executive extends congratulations to Chris Ellis and Neal Ferris, for receiving the Annual Special Achievement Award from the Ontario Association of Professional Archaeologists. This award is in recognition of their efforts in bringing together the Chapter's Occasional Publication #5, "The Archaeology of Southern Ontario to A.D. 1650". The award will be presented during a 1 day symposium held by the APA at Wilfrid Laurier University in Waterloo, on November 21, 1992 (Room 2C8). This meeting is open to all.

SOCIAL REPORT

This year's Christmas Party will be held at the home of our Chapter President. Pat and Les will welcome everyone on Saturday, December 5th, starting at 6 PM, at 302-261 Platt's Lane. As always it will be BYOB and a dessert, salad or vegetable, while the Chapter provides the Turkey and trimmings. Give Pat a call at home or at Grosvenor Lodge for more information.

At our November Speaker Night we will hold a vote on where future speaker nights will be held. As discussed in a previous issue of **KEWA**, Some members have suggested moving our speaker nights to Grosvenor Lodge from the London Museum of Archaeology, since the Lodge is in a more accessible part of the city, while other members have suggested continuing the meetings at the Museum. So if you have a preference, please come out to November's speaker night to let us know what you prefer. If you can't make it that evening, please phone the Chapter at 645-2845 to get your vote in!

At last month's meeting a design was selected for a Chapter T-shirt. Nick Adams' artwork from the Archaeology of Southern Ontario volume cover was selected, and just a couple of weeks later 50 T-Shirts were in the hot little hands of the Executive! At the recent OAS conference in Toronto, 15 shirts were sold. These items come in a wide range of sizes, and the artwork is in green and brown, on a natural coloured cotton T-shirt. These babies are going at the incredibly low price of \$13.00, and can be bought at speaker nights or at the Chapter office in Grosvenor Lodge. Act fast before they're all gone (of course, if they're sold out, we'll have to have another contest!).

On November 5th an organizing committee meeting was held at Grosvenor Lodge to plan events for the 1993 Heritage Week activities planned for this upcoming February. The Lodge will be hosting a week long series of celebrations, including Open House, displays, demonstrations and special speakers. Additional ideas and help would be most appreciated. If you are willing to volunteer some time, please contact a member of the Executive.

EDITOR'S REPORT

This month we present yet another offering from the CAA conference that was held in London last May. This month Bill Fitzgerald offers some musings on changes to Neutral Iroquoian society both before and after European contact. Certainly some food for thought here (Note: letters to the editor on articles appearing in **KEWA** are welcome, and will be printed in a subsequent issue of the newsletter, space permitting).

Contact, Contraction, and the Little Ice Age: Neutral Iroquoian Transformation, AD 1450-1650

William R. Fitzgerald (Wilfrid Laurier University and Université Laval)

Introduction

An underlying tenet of Iroquoian research as far back as the writings of Lewis Henry Morgan (1851:144-146), and particularly following the work of William Ritchie (1969), James Wright (1966) and others has been that Iroquoian culture was in a state of progressive development that reached its zenith during the 17th century. Exposure to Europeans, their material culture and diseases has traditionally been considered as the dominant, if not solitary, agent in the abrupt decline of Ontario Iroquoian societies (e.g. Warrick 1984:131).

The profound effect of European contact on Ontario Iroquoian societies cannot be denied; however, it has been proposed upon a re-appraisal of the archaeological evidence that certain aspects of Iroquoian culture in Ontario had attained cultural apogee by the 15th century. By the time European presence became an influential factor, Ontario Iroquoian society was in the process of redefinition or, more precisely, devolution (Fitzgerald and Jamieson 1985) -- much like the contemporary chiefdoms of the southeastern United States (Peebles 1986; Smith 1987). The state of 17th century Neutral Iroquoian society was the result of centuries of adaptations to a complex series of diverse circumstances and forces initially independent of, but later compounded by, the effects of European contact. Amongst the trends observable within the archaeological record between the 15th and 17th centuries are population contraction and dispersal, changing residential and subsistence patterns, a florescence of ritualism, and the adoption of foreigners and exotic material culture.

In 1615 Samuel de Champlain noted that the Iroquoian-speaking group concentrated around the western end of Lake Ontario was not involved in the hostilities between the Huron and the Iroquois (Biggar 1922-1936 3:99-100). That neutrality led Champlain and subsequent Europeans to refer to this group as the Neutral nation. To the Huron they were the *Atiouandaronk* (Thwaites 1896-1901, 8:116). While the devastating attacks of the Iroquois between 1647 and 1651 effectively extinguished this distinctive community, the cumulative influences that had earlier moulded this, and other northern Iroquoian cultures, were also responsible for their redefinition and ultimate demise.

Neutral Distribution

Neutral Ontario Iroquoian occupations datable to the 15th century are dispersed in a broad band along the north shore of Lake Erie at the late 20th century northern edge of the Carolinian biotic province (Figure 1). During the first half of the 16th century a large tract of Neutral territory west of the Grand River was abandoned (Lennox and Fitzgerald 1990). The ensuing compaction of Neutral groups around the southwestern corner of Lake Ontario led to the formation of well-defined tribal territories during the late 16th and early 17th centuries, evidently

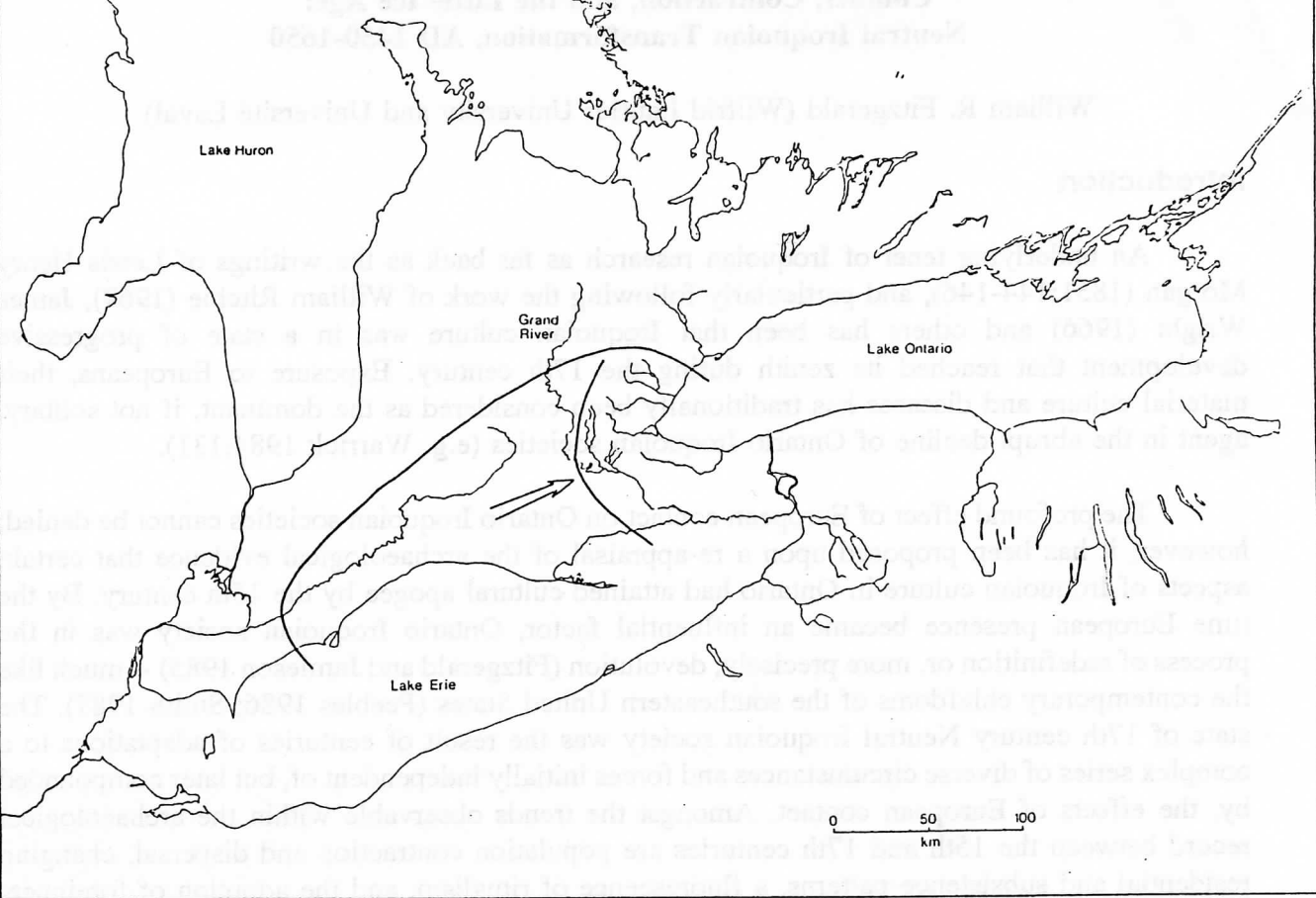


Figure 1: The Neutral Iroquoian Contraction.

forming a loose confederacy that persisted until their dispersal (Fitzgerald 1990a:252-404). It was also during the second half of the 16th century that other Iroquoian groups undertook long-distance relocations. Huron groups in the Trent Valley and around the northwest corner of Lake Ontario were withdrawing into the confederated territory described initially by Champlain (Ramsden 1990), St. Lawrence Iroquoian groups were dispersed (Jamieson 1990), and the Susquehannock migrated southward toward Chesapeake Bay (Witthoft 1959).

The migrations of the Huron, Neutral, and Susquehannock have been thought by some to have been motivated by the desire to relocate to areas where access to European goods would have been enhanced (Hunter 1959; Ramsden 1978; Trigger 1985, 1991). Even though Europeans had been in the Gulf of St. Lawrence since the end of the 15th century, they were there initially to fish, hunt whales, and explore, not to conduct commercial transactions with Natives (Turgeon

et al 1992). While ceremonial exchanges and ancillary bartering did take place along the coast and the St. Lawrence River, the majority of European goods obtained in these limited activities would have become dispersed long before they would have filtered inland. It was only after Native groups could supply a commodity that Europeans desired that intensive commercial trade might be anticipated. Felt from beaver pelts became that commodity; however, the French demand for non-Russian beaver did not become significant until the second half of the 16th century. It was not until the first years of the 1580s that the commercial fur trade commenced in northeastern North America, initially centred in the Gulf of St. Lawrence. Its onset is indicated by the dramatic increase of European goods of that era on Native sites in the Canadian Maritimes, along the Saguenay River, and around the lower Great Lakes.

It is inconceivable that the incredibly small amounts of goods that did filter indirectly into southern Ontario prior to 1580 would have triggered population movements of such magnitude. That the migrations clearly preceded the commercial fur trade is especially evident in the Neutral situation where well-defined sequences of site relocations document the successive stages of the introduction of datable European commodities (Fitzgerald 1990a). Supporting the notion that these migrations were not a consequence of competition for European goods is the virtual absence of these commodities from St. Lawrence Iroquoian settlements. Martijn (1969) has suggested that the abandonment of the St. Lawrence lowlands was instead due to the failure of horticulture caused by the onset of the Little Ice Age.

It has been proposed, by the presence of heavily fortified frontier settlements and foreign Native ceramics that, during the first half of the 16th century, Neutral groups in extreme southwestern Ontario were involved in hostilities with the neighbouring Algonquian Fire Nation (Fox 1980). The Neutral abandonment might be interpreted as a means to increase the buffer zone between the combatants. The initial cause of these hostilities is unclear, but, like their 17th century manifestations that have been ascribed to competition for beaver hunting territories (Fitzgerald 1982a:100), they may have been related to competition over resources, not so much in a capitalistic sense related to fur trade activities, but more basically for survival.

From mid-16th century settlements within the area of contraction, the presence of substantial house and village expansions (Figure 2), and the continued practice of extensive settlement fortification indicates the incorporation of immigrants and the perception of an enduring threat (Fitzgerald 1991). Similar expansions were occurring at contemporary Huron villages in the Trent Valley (Ramsden 1989).

The purported intensification of warfare in the lower Great Lakes throughout the precontact portion of the Late Woodland period has, since the 1950s, been linked to an increasing dependence on horticulture whereby the male members of society could continue to demonstrate their masculinity in some pursuit other than hunting (Witthoft 1959; Trigger 1981; Engelbrecht 1987). However, as faunal and carbon isotope evidence indicate (Table 1; Figure 3), female-dominated farming activities never resulted in the abandonment of hunting.

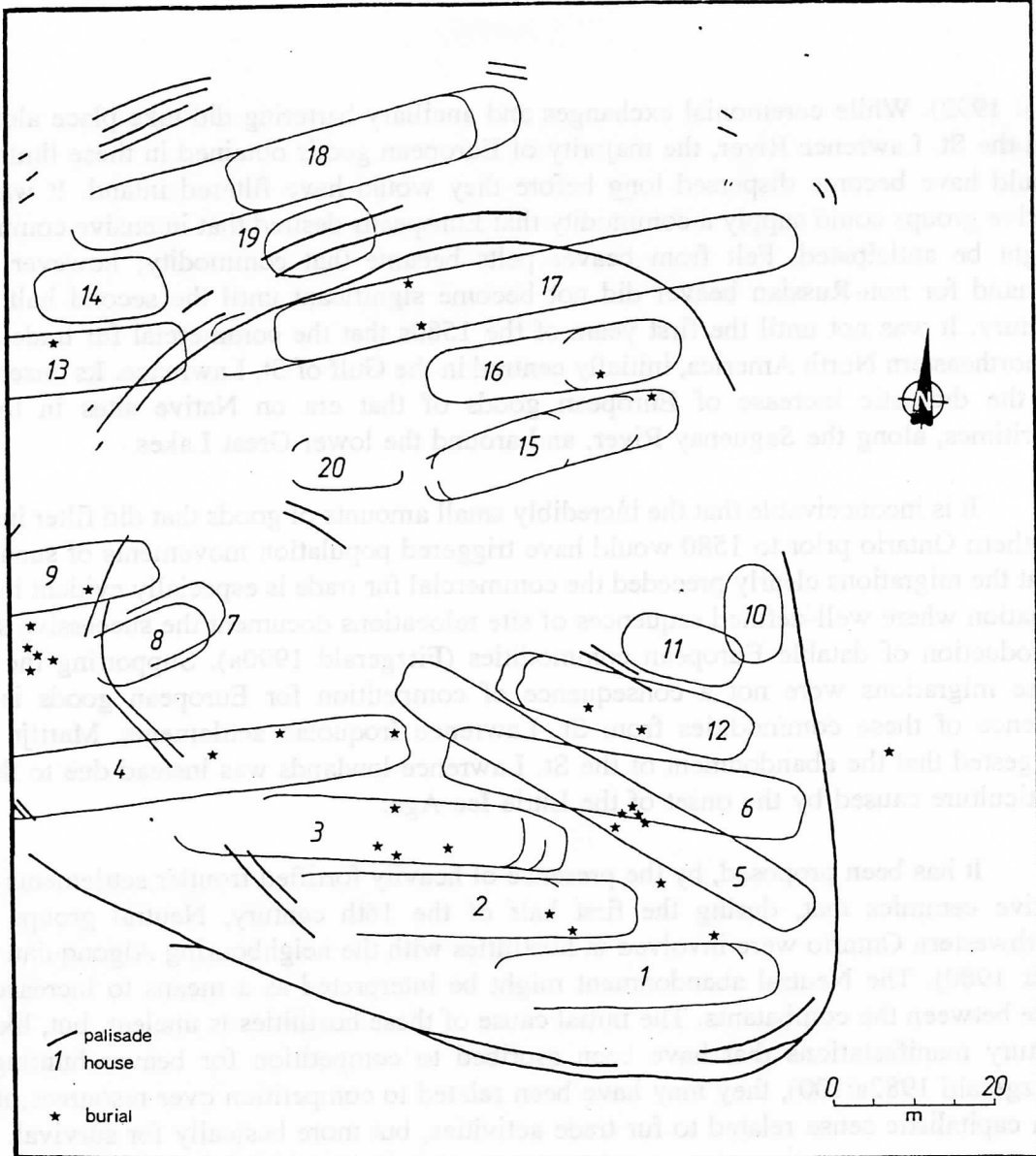


Figure 2: MacPherson (AhHa-21) Village Plan.

The formulation of the 1950s' and 1960s' notion of males having to spend more time waging war in order not to feel emasculated is understandable in terms of a Cold War mentality. However, the archaeological evidence implemented to propose an escalation of precontact warfare and cannibalism must be carefully scrutinized. "Brutalized" human remains -- interpreted as such by having been shattered, charred, or modified to produce artifacts, have been recovered in archaeological contexts that can just as convincingly be related to burial practices or the by-products of those rituals (e.g. Woodley et al 1992). Cremated remains and discarded skeletal items not included in secondary reburials have probably been inappropriately attributed to hostile actions, especially if recovered from plough-disturbed contexts, and most certainly if the skeletal

TABLE 1:

Trends in the Exploitation of Deer and Woodchuck at Neutral Iroquoian Settlements

Period	Site	Mammal Sample Size	Deer %	Woodchuck %
1400-1500	Chypchar	349	1.1	15.5
	Coleman	271	2.6	26.6
	Ivan Elliot	502	1.2	24.9
	Moyer	704	2.7	73.4
	Sluyter	71	5.6	18.3
1500-1580	Buddy Boers	922	85.8	0.3
	Knight-Tucker	602	73.6	0.0
	MacPherson	291	78.4	0.3
	Raymond Reid	237	59.1	7.6
	Wolfe Creek	1093	40.4	0.1
1580-1600	Cleveland	4466	64.6	1.3
1600-1630	Brown	881	64.7	0.6
	Christianson	1169	50.1	2.6
	Sherk-Sahs	369	29.3	0.3
	Thorold	820	30.9	2.4
1630-1650	Bogle 1	51	58.8	0.0
	Bogle 2	65	36.4	1.5
	Hamilton	8249	64.9	0.7
	Hood	2250	75.2	0.4
	McIntosh	445	16.8	1.6
	Walker	7626	70.9	1.1

TABLE 2:

Trends in Neutral Iroquoian Longhouse Lengths

Period	Number of Houses	Length (metres)	
		Range	Mean
1400-1500 ¹	13	23-123	61.5
1500-1580 ²	33	12-78	29.5
1580-1630 ³	19	6-45	19.4
1630-1650 ⁴	18	6-28	15.3

Coleman (MacDonald 1986); Ivan Elliot (Fitzgerald 1990b); Moyer (Wagner *et al* 1973)

MacPherson (Fitzgerald 1991a); Raymond Reid (Fitzgerald 1990b); Zap

Christianson (Fitzgerald 1982a); Cleveland (Noble 1972); Fonger (Warrick 1984); Thorold (Noble 1980)

Bogle 1 and 2 (Lennox 1984b); Hamilton (Lennox 1981); Hood (Lennox 1984a);

Walker (Wright 1981)

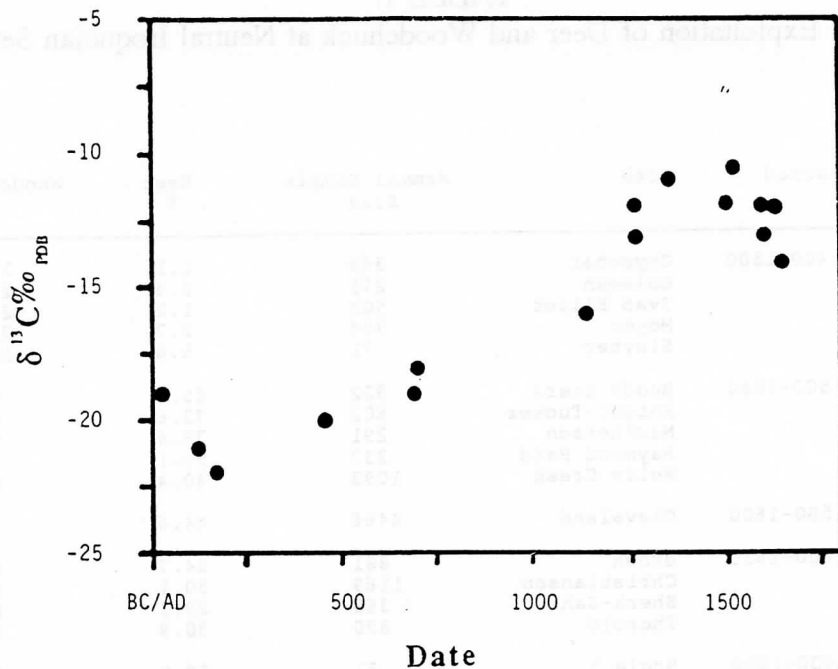


Figure 3: Carbon Isotope Trends in Iroquoian Populations (after Katzenberg et al 1992).

elements belong to very young individuals. As well, shallow primary interments are commonly scattered by recent agricultural activities (e.g. Saunders 1989). The fabrication of gorgets and other items from human bone should not necessarily be perceived as evidence of mistreatment. The ornately decorated Roman Catholic ossuary contains small skeletal fragments of Saints -- hardly a situation that could be construed as a display of interpersonal violence. In fact, the Neutral are reported by the Jesuits to have displayed the remains of family members within the longhouse, sometimes for prolonged periods, prior to final burial (Thwaites 1896-1901 21:199).

Intercultural feuding cannot be denied as a fact of Iroquoian life; however, its impact on the formation of precontact Ontario Iroquoian culture should not be exaggerated on the present extent of archaeological evidence and Eurocentric interpretations attributed to the treatment of Iroquoian dead.

Cultural Trends

A brief overview of the major cultural trends for the Neutral reveal that the society underwent significant transformation in the two centuries prior to its demise. Trends can be evaluated in light of natural cultural evolution, foreign influences, and the limitations imposed on a society occupying a transitional biotic zone at the northern limit of productive horticulture during a period of world-wide climatic deterioration.

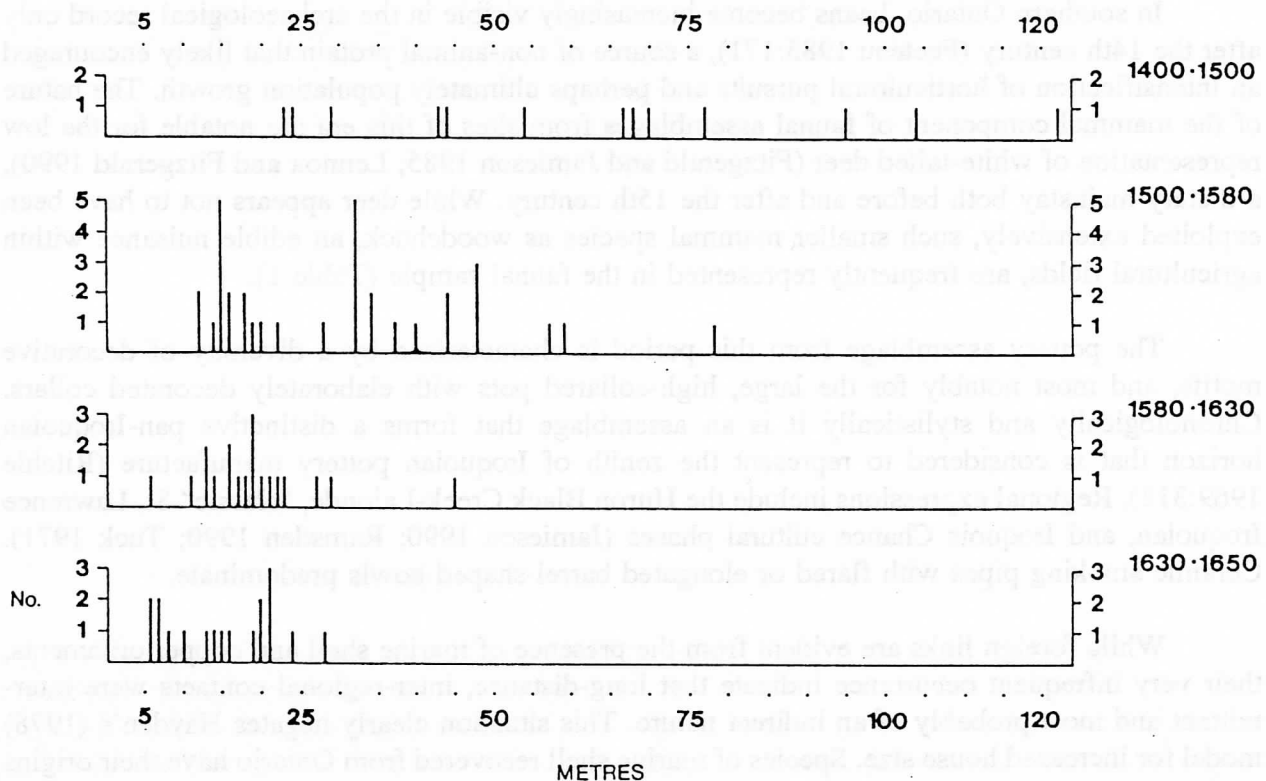


Figure 4: Neutral Iroquoian Longhouse Length Trends.

The 15th Century

The widely distributed Neutral of the 15th century share a number of traits that are divergent from later expressions of Neutral culture. Longhouses attain their greatest lengths at this time -- frequently over 100 metres long (Table 2; Figure 4), from which can be inferred an increased complexity of social organization. The significant enlargement of house length at this time has been attributed to the desire of families to attach themselves to despotic military war lords (Finlayson 1985:438; MacDonald 1986:178; Warrick 1984:65-68) or successful traders (Hayden 1978:112-114). Since evidence from 20th century New Guinea is used to argue both scenarios for 15th century Ontario, perhaps an alternate explanation can be suggested from a

more comparable situation from the Great Basin area of the southwestern United States. Larson and Michaelsen (1990) propose that one of the results of an intensification of horticultural pursuits by the Virgin Branch Anasazi during the 11th and 12th centuries was the need to form larger social units in order to increase labour efficiency.

In southern Ontario, beans become increasingly visible in the archaeological record only after the 14th century (Fecteau 1985:171), a source of non-animal protein that likely encouraged an intensification of horticultural pursuits and perhaps ultimately population growth. The nature of the mammal component of faunal assemblages from sites of this era are notable for the low representation of white-tailed deer (Fitzgerald and Jamieson 1985; Lennox and Fitzgerald 1990), a dietary mainstay both before and after the 15th century. While deer appears not to have been exploited extensively, such smaller mammal species as woodchuck, an edible nuisance within agricultural fields, are frequently represented in the faunal sample (Table 1).

The pottery assemblage from this period is characterized by a diversity of decorative motifs, and most notably for the large, high-collared pots with elaborately decorated collars. Chronologically and stylistically it is an assemblage that forms a distinctive pan-Iroquoian horizon that is considered to represent the zenith of Iroquoian pottery manufacture (Ritchie 1969:313). Regional expressions include the Huron Black Creek-Lalonde, "classic" St. Lawrence Iroquoian, and Iroquois Chance cultural phases (Jamieson 1990; Ramsden 1990; Tuck 1971). Ceramic smoking pipes with flared or elongated barrel-shaped bowls predominate.

While foreign links are evident from the presence of marine shell and copper ornaments, their very infrequent occurrence indicate that long-distance, inter-regional contacts were intermittent and most probably of an indirect nature. This situation clearly negates Hayden's (1978) model for increased house size. Species of marine shell recovered from Ontario have their origins in the Chesapeake Bay and Gulf of Mexico areas (Pendergast 1989), and while native copper from southern Ontario archaeological sites has traditionally been assigned a Lake Superior origin, a southern or eastern origin cannot be dismissed (cf. Rapp et al 1990). Native copper outcrops have been noted from various localities in the Appalachians from Georgia to New Brunswick as far back as the 1560s, when Goulaine de Laudonniere, a Norman captain exploring the coasts of Georgia and Florida, referred to copper mines: "in the mountains of Appalesse" (Sauer 1971:206).

The 16th Century

The 16th century was a period of change and re-adjustment. During this century the once widely dispersed Neutral were consolidating into well-defined tribal areas around the southwestern corner of Lake Ontario. Changes in residential patterns also occurred, as suggested by the trend toward a reduction in longhouse size, a pattern that becomes even more noticeable into the 17th century (Table 2; Figure 4). When under pressure, societies at the confederacy level tend to fracture into components (Tooker 1963:122).

Structural features of Neutral longhouse interiors were also undergoing change. Regularly-spaced, large diameter posts situated approximately 1.5 metres from the side walls had served as roof supports and to compartmentalize lateral storage and sleeping sections. Similarly,

house end cubicles were defined by posts parallel to the end walls. This pattern has been observed in all northern Iroquoian houses. A shift from post to plank partitions (lateral "slash" pits and linear end features) began around mid-century, a technological phenomenon observed only within Neutral structures (Figure 5). If this was related to the appearance of European splitting implements it would be expected that this would have been practised by adjacent groups as well. This change was, however, underway before the post-1580 presence of substantial numbers of iron axes and chisels in the Northeast.

During the 16th and 17th centuries there was a sudden and dramatic change in the nature of the mammal assemblages recovered from Neutral settlements to one dominated by white-tailed deer (Table 1). The large amounts of animal protein that were once again being procured presumably would have necessitated a return to traditional large-game hunting practices.

In the 16th century, and continuing into the 17th century, ceramic vessel collars become shorter and decorative motifs progressively simplified and homogeneous. Pipe bowl shapes also shift to short barrel, collared, and coronet styles. In contrast to an apparent trend toward simplification of ceramic vessels and non-effigy pipes, during the 16th, and especially the 17th century, there is a rapid evolution of zoomorphic and anthropomorphic effigies on ceramic and ground lithic smoking pipes (Mathews 1980).

Exotic goods on southern Ontario habitation sites and within burials remained scarce until the last quarter of the 16th century when there was a sudden explosion in the presence of exotic goods -- Native marine shells and ornaments, and Basque supplied European ornaments and utilitarian items. With the majority of these commodities being placed, unaltered, with the dead it would seem that the dramatic increase in the importation of these goods indicates an intensification of ritualism and mortuary ceremonialism (cf. Trigger 1991:1204-1205). The onset of the intensified European commercial fur trade at this time appears to have been a fortunate event that provided yet another abundant source of goods with metaphorical associations.

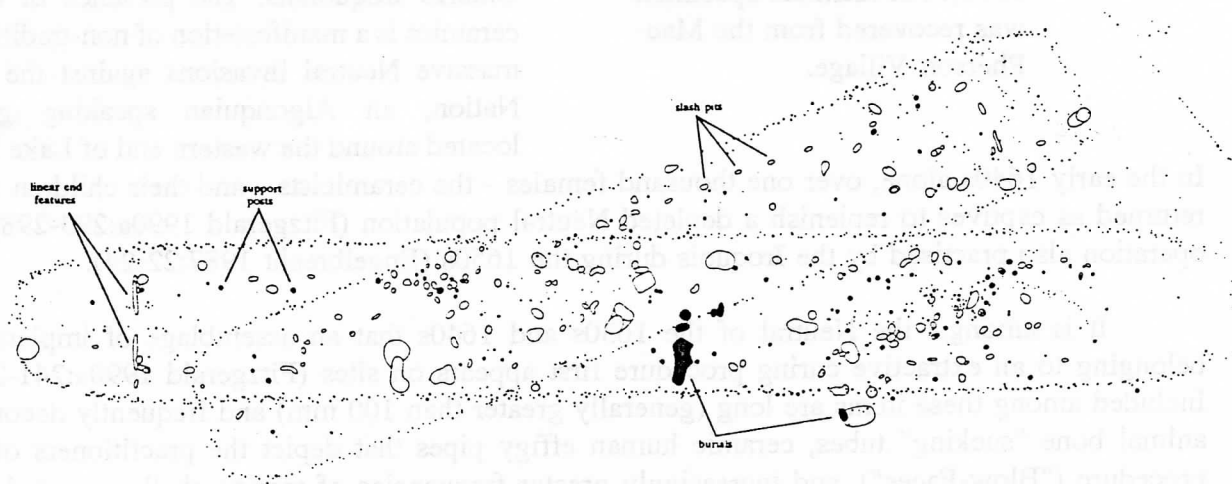


Figure 5: Houses 5 and 6 From the MacPherson Village.

Also indicating an increasing concern with ritual, just prior to the flood of European goods and marine shell, is the appearance of distinctively Late Mississippian Southeastern Ceremonial Complex anthropomorphic falcon hunter/warrior icons (Fuller and Silvia 1984:35-37; Lewis and Kneberg 1970:96-97; Muller 1989) on Neutral pipes and vessels (Figure 6).

The 17th Century

Even though Neutral tribal areas remained intact into the 17th century there are numerous indicators of cultural instability and turmoil, especially during the quarter century prior to their 1650 dispersal. Dwellings continued to decrease in length with the smallest Neutral houses of the previous two centuries present during the second quarter of the 17th century (Table 2; Figure 4).

On the 17th century sites of the Spencer-Bronte Neutral tribal grouping (Figure 7) there is a sudden appearance of a shell-tempered ceramic tradition (Fitzgerald 1982a; Lennox 1981, 1984a, 1984b; Lennox and Fitzgerald 1990). It is especially well-represented on sites dating to the 1630s and 1640s when European epidemics ravaged Ontario Iroquoians. The presence of these ceramics is a manifestation of non-traditional massive Neutral invasions against the Fire Nation, an Algonquian speaking group located around the western end of Lake Erie.

In the early 1640s alone, over one thousand females - the ceramicists - and their children were returned as captives to replenish a depleted Neutral population (Fitzgerald 1990a:293-298), an operation also practised by the Iroquois during the 1650s (Engelbrecht 1987:22-24).

It is amongst the Neutral of the 1630s and 1640s that an assemblage of implements belonging to an extractive curing procedure first appears on sites (Fitzgerald 1990a:241-248). Included among these items are long (generally greater than 100 mm) and frequently decorated animal bone "sucking" tubes, ceramic human effigy pipes that depict the practitioners of the procedure ("Blow-Faces"), and increasingly greater frequencies of marine shell, copper, brass, and turtle shell rattles. Clearly the devastating epidemics of the time, compounded by periods

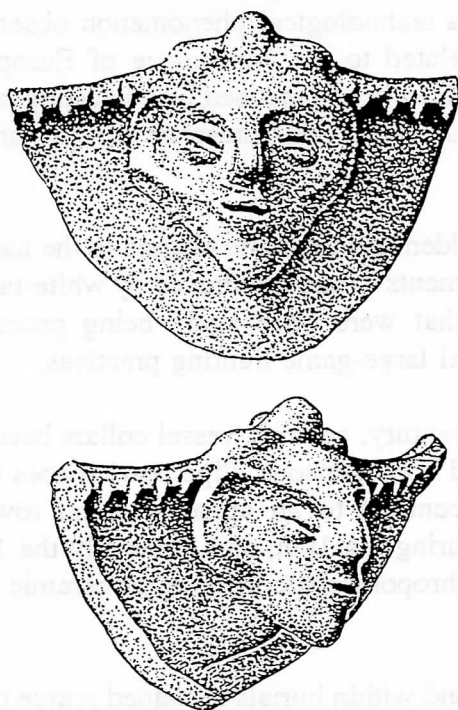


Figure 6: Dallas Phase Ceramic Effigy From the Hiwassee site, Tennessee (Lewis & Kneberg 1970). An identical specimen was recovered from the MacPherson Village.

of famine, were having serious psychological and physical effects on the population.

Foreign goods continued to be present in significant amounts; however, in the case of the French and Dutch supplied items, they tended to supplement rather than replace Native equivalents. The notable exception amongst the Neutral is the replacement of chipped lithic cutting and groundstone chopping implements. The adoption of foreign material culture continued to be pragmatic and ritualistic. The deaths of large numbers of craftspeople during the epidemics did, however, accelerate the trend of replacements and dependence on European technology.

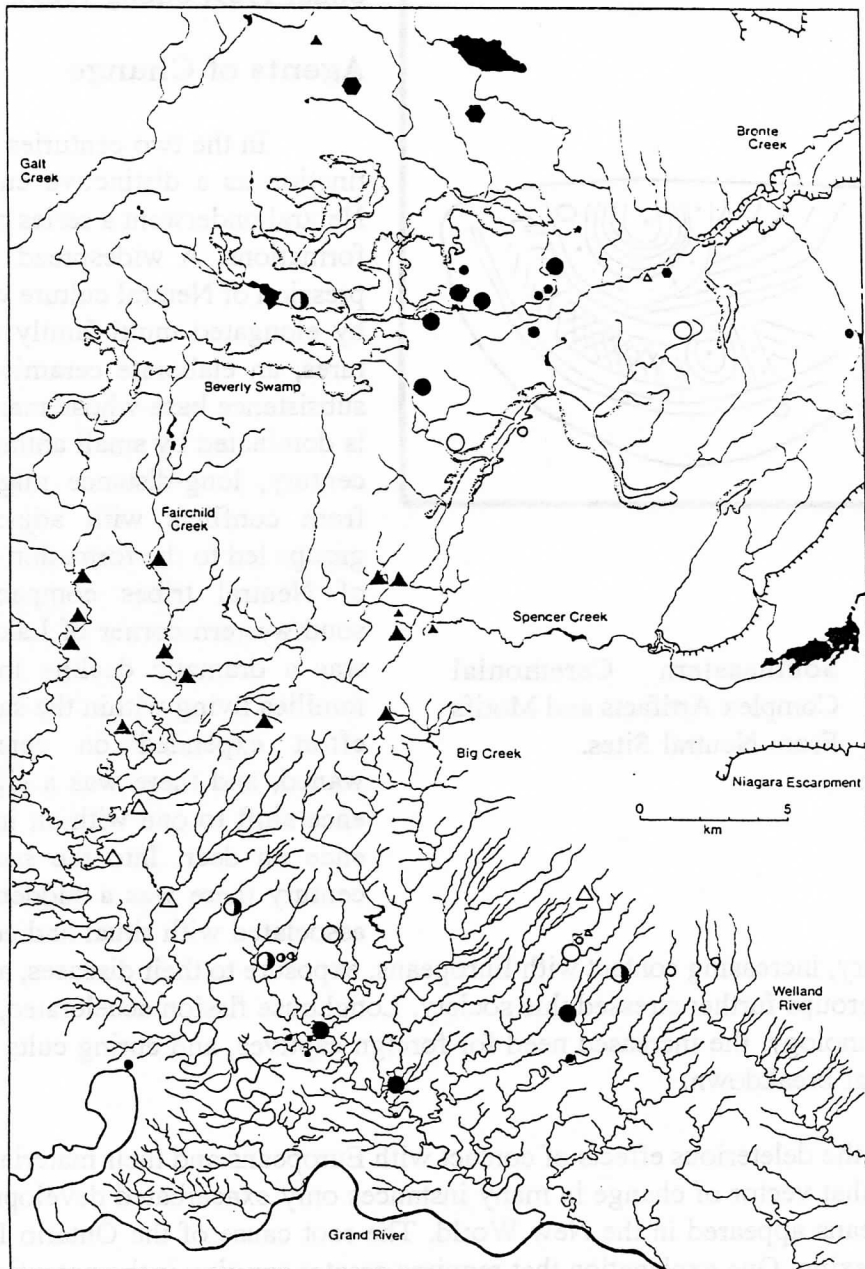


Figure 7: Spencer-Bronte Creek and Fairchild-Big Creek Tribal Areas.

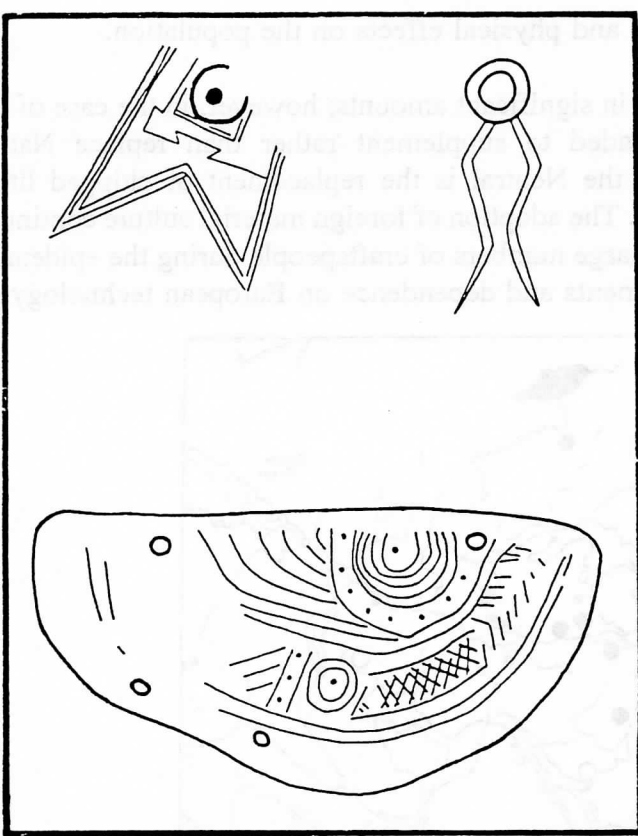


Figure 8: Southeastern Ceremonial Complex Artifacts and Motifs From Neutral Sites.

Additional Southeastern Ceremonial Complex artifacts appear on Neutral sites -- marine shell masks and antler combs with forked-eye or Thunderbird motifs, and marine shell gorgets with rattlesnake motifs (Boyle 1900; Fitzgerald 1982b; Figure 9). These articles have hunting and warring associations (J. Brown 1989; Smith and Smith 1989; Strong 1989).

Agents of Change

In the two centuries prior to their extinction as a distinctive cultural entity, the Neutral underwent a series of dramatic transformations. A widespread 15th century expression of Neutral culture was characterized by elongated multi-family residential structures, an elaborate ceramic tradition, and a subsistence base whose mammal component is dominated by small animals. Into the 16th century, long-distance migrations resulting from conflicts with adjacent Algonquian groups led to the formation of a confederacy of Neutral tribes compacted around the southwestern corner of Lake Ontario. There was a dramatic decline in the number of families living within the same structure, the effort expended on ceramic decoration waned, and there was a significant subsistence shift to one with an increased dependence on deer. Into the second half of the century there was a sudden rise in artifacts associated with ritual and ceremony. During

the 17th century, increasing contact with Europeans, exposure to their diseases, and conflicts with other Native groups further stressed this society. Longhouse fission accelerated, the adoption of European technology, the increased need for foreign captives, and curing cults all characterized a rapid cultural breakdown.

While the deleterious effects of contact with Europeans and their material culture are well documented, that vector of change in many instances only exacerbated developments that began before Europeans appeared in the New World. The root cause of the Ontario Iroquoian demise remains perplexing. One explanation that requires greater scrutiny is the potential effect of a 16th century climatic deterioration on a society that had become increasingly involved in horticulture

in a horticulturally marginal area.

For such a proposition to be supported it will have to be demonstrated that, firstly, there was a significant climatic cooling, and secondly, that southern Ontario is a marginal horticultural zone. In combination, there would be serious consequences, perhaps triggering the diverse, yet interrelated chain of events in southern Ontario during the 16th and 17th centuries.

Climatic Deterioration

From across the northern hemisphere, weather records, glacier movements, pollen cores, wine harvest dates, and even paintings convincingly attest to the onset of a 16th century cooling, a period referred to as the Neo-Boreal or Little Ice Age.

Between 1350 and 1500 there was a moderate retreat of Alpine glaciers; however, the climate did not return to the mildness which characterized the turn of the millennium (Le Roy Ladurie 1971:264). Even though researchers assign varying temporal durations to the Little Ice Age, there is agreement that this era of climatic deterioration included the latter half of the 16th century and the 17th century. Bryson and Wendland (1969:296) suggest the period between 1550 and 1850 consisted of cool summers and cold autumns, an environment that would have had great impact on Native farmers in the Northeast.

Hammer et al (1980:235) suggest a period of longer duration, between 1350 and 1900, that was divided by minor interstadials from 1500 to 1550 and 1700 to 1800. This pattern corresponds with the acidity profile from the Crete ice core in Greenland whereby greater amounts of volcanic aerosol acids are deposited during periods of large scale volcanism, an occurrence that has been suggested as a contributor to climatic cooling (Porter 1981:141).

Sulman (1982, 1:131-132) suggests a longer span - 1430 to 1850 - for the main phase of the Little Ice Age for most parts of the world. During the 1430s the first severe winters were recorded after the balmy Viking age. Rivers in Germany froze, many French vines were killed by frost, and cold winters became common. In the lowlands of northwest Europe, by 1500, summers were about 0.7 degrees Celsius cooler than the summers of the medieval optimum. This trend led to a shortening of the growing season by as much as five weeks by the 17th century (Ford 1982:77; Grove 1988:413-414). Throughout 16th century Europe there was a notable cooling between 1550 and 1600 (Le Roy Ladurie 1971:281-287; Grove 1988:193). For example, tree ring densities in Switzerland indicate that during the early stages of the Little Ice Age, summer temperatures were about two degrees Celsius lower than those of the late 19th and early 20th centuries (Grove 1988:193). During the early 17th century, the glaciers of Europe advanced decisively, and the years between 1643 and 1653 were marked by the severest winters in western Europe since the end of the Pleistocene ice age (Sulman 1982, 1:131-132). Poor fishing and pestilence were among the consequences, and in marginal agricultural areas, where productivity was dependent on latitude and altitude, farmlands were less productive (Parry 1981; Pfister 1981).

This cooling period is also documented in the artwork of the period. The tradition of portraying winter landscapes, frozen rivers and harbours, abundant snowfall, and winter sports

in Flemish paintings and prints was established by Pieter Bruegel the Elder (1528/30-1569) in the later half of 16th century. Flemish immigrant painters were largely responsible for introducing the subject into the Dutch repertory in the first quarter of the 17th century (Bugler 1979:59; Gaskell 1990:414).

In the lower Great Lakes area, Fecteau (1985:98-99) has proposed a sequence of climatic fluctuations. During the Pacific I stage (1250-1450) there was a climatic deterioration characterized by decreased rainfall and cooler temperatures, during which time southern Ontario communities located on sandy soils were abandoned. The Pacific II stage (1450-1550) was an era of climatic amelioration which permitted a northward movement of Carolinian biotic zone fauna. During the Neo-Boreal (1550-1880), climatic deterioration included a cooling of temperatures by about one degree Celsius. The Recent stage (1880-present) is marked by a general warming trend.

From Crawford Lake, in southern Ontario, the fossil-pollen record reveals that, after 1360, pine and oak forests were beginning to replace the previously dominant beech-maple forest (McAndrews 1988:682). The presence of oak began to increase around 1370, peaking around 1650, while white pine, a northern species near its southern limit at Crawford Lake, becomes more prevalent around 1390, peaking around 1860. McAndrews (1988:683) attributes the advance of northern species to the cooler climate of the Little Ice Age. The establishment of white pine stands in the vicinity of Huron sites datable to the early 16th century (Bowman 1979) further supports the onset of cooler climatic conditions.

Southern Ontario as a Marginal Horticultural Area

Biotic boundaries are not static. When climate changes boundaries shift, and when boundaries shift, the subsistence base may be affected, especially in areas in high latitudes where conditions for plant growth and horticulture are marginal (Grove 1988:1; Harding 1982:3).

In late 20th century Ontario, corn can be grown effectively only as far north as what was 17th century Huron territory. This is based on such criteria as the number of frost-free days, growing degree days, "Corn Heat Units" (CHU), the length of the growing season, and soil conditions (Fecteau 1985:102-108). Corn heat units (based on daytime temperatures over 10 degrees Celsius and night temperatures over 4.4 degrees Celsius) are especially useful in determining the viability of corn. Since corn is one of the few annual crops that uses the full frost-free period to complete its life cycle, varieties must be carefully selected to make optimum use of heat, and to avoid frost damage. Tender crops such as corn and beans are damaged when air temperatures range between minus 1.5 degrees Celsius and the freezing point. Currently, most shelled corn is grown in areas having CHU values of 2900 or more, while some grain corn can be grown in areas that have as few as 2500 CHU (D. Brown et al 1980:33, 37-38; Figure 9). Bean production is most efficient in areas with greater than 3000 CHU (Fecteau 1985:32).

While it is a reasonable assumption that climate-dependent values in southern Ontario were reduced during the 16th and 17th centuries, it is difficult to confidently determine how much further south the limits of effective aboriginal horticulture would have shifted. Historical

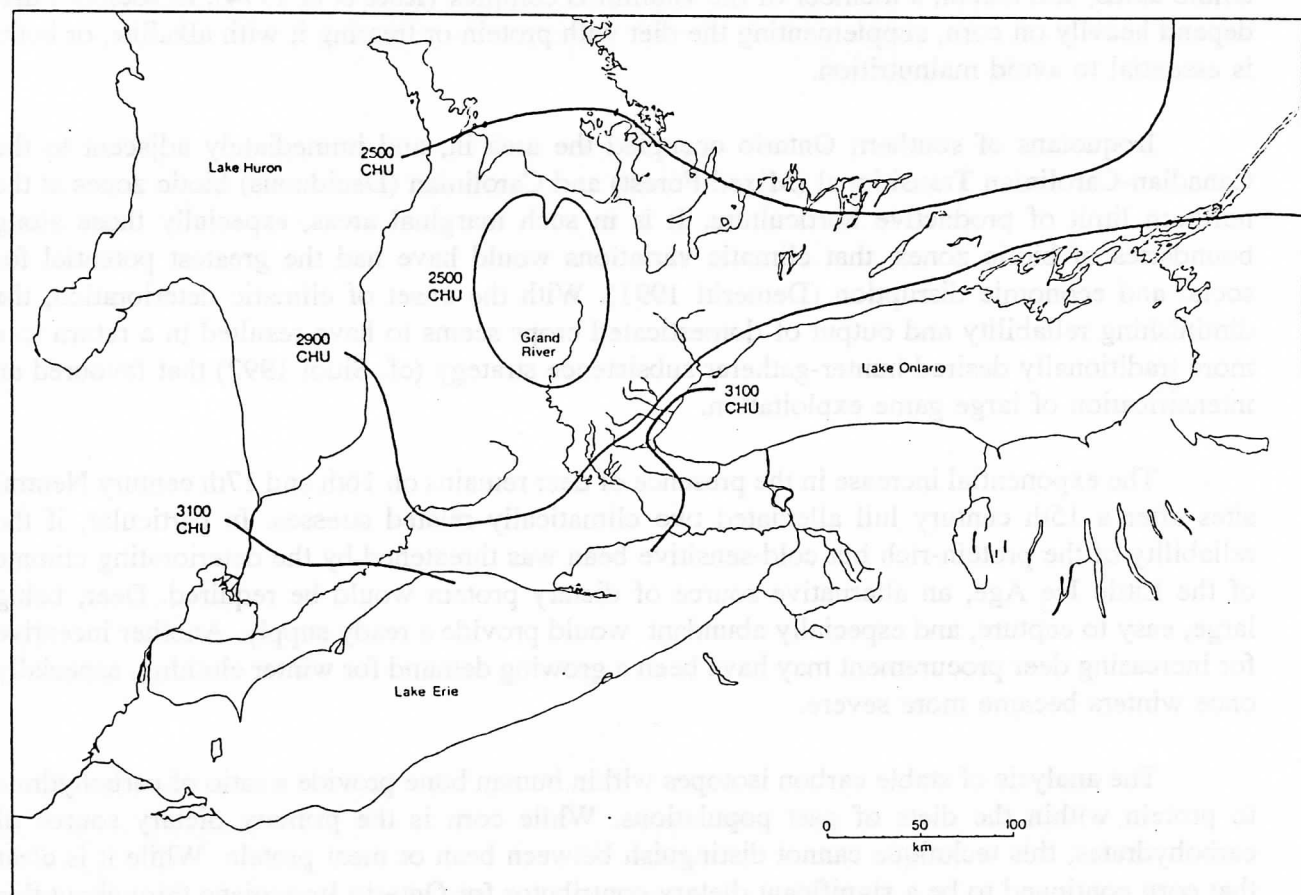


Figure 9: Corn Heat Unit Values for Southern Ontario.

accounts from 17th century southern Ontario do, however, provide a notion of the extent of the climatic difference. Based on 20th century conditions, Heidenreich (1971) suggests that one crop failure should be expected every ten years. However, between 1628 and 1650 when the Jesuits were amongst southern Ontario groups, severe winters, droughts, crop failures, and famines are documented as an almost annual occurrence (cf. Ares 1970; Thwaites 1896-1901), reflecting, in part, the climatic instability of the Little Ice Age: "...behold dying skeletons eking out a miserable life, feeding even on the excrements and refuse of nature" (Thwaites 1896-1901, 35:89).

The Cultural Unsuitability of Marginal Horticulture

If not supplemented with other foods or prepared with certain additives, corn has marginal nutritional value. A dietary mixture of corn and beans produces a combination of amino acids

that provide a good source of protein (Fecteau 1985:30). Soaking, boiling, or cooking corn with lime (calcium oxide) or alkali (potassium oxide) also releases the essential lysine and tryptophan amino acids, and niacin, a member of the vitamin B complex (Katz et al 1974). In societies that depend heavily on corn, supplementing the diet with protein or treating it with alkaline, or both, is essential to avoid malnutrition.

Iroquoians of southern Ontario occupied the area in, and immediately adjacent to the Canadian-Carolinian Transitional (Mixed Forest) and Carolinian (Deciduous) biotic zones at the northern limit of productive horticulture. It is in such marginal areas, especially those along boundaries of biotic zones, that climatic variations would have had the greatest potential for social and economic disruption (Demeritt 1991). With the onset of climatic deterioration, the diminishing reliability and output of domesticated crops seems to have resulted in a return to a more traditionally desired hunter-gatherer subsistence strategy (cf. Siuoi 1992) that favoured an intensification of large game exploitation.

The exponential increase in the presence of deer remains on 16th and 17th century Neutral sites after a 15th century lull alleviated two climatically related stresses. In particular, if the reliability of the protein-rich but cold-sensitive bean was threatened by the deteriorating climate of the Little Ice Age, an alternative source of dietary protein would be required. Deer, being large, easy to capture, and especially abundant would provide a ready supply. Another incentive for increasing deer procurement may have been a growing demand for winter clothing, especially once winters became more severe.

The analysis of stable carbon isotopes within human bone provide a ratio of carbohydrate to protein within the diets of past populations. While corn is the primary dietary source of carbohydrates, this technique cannot distinguish between bean or meat protein. While it is clear that corn continued to be a significant dietary contributor for Ontario Iroquoians throughout this era, carbohydrate values were decreasing by the 17th century (Schwarcz et al 1985; Katzenberg et al 1992; Figure 4). If corn consumption was decreasing, so presumably would that of bean. The dramatic increase in deer exploitation quite probably represents the manifestation of a replacement of plant protein.

The pressures on a population that had become increasingly dependent on horticulture, especially in climatically unstable times and marginal areas, may have led to intercultural conflicts resulting from increased competition for deer hunting territories (Gramly 1977). Such conflicts may have been avoided when horticultural products likely constituted a greater proportion of the diet. In southern Ontario, land suitable for horticulture is much more abundant and widespread than are tracks of land that would support high densities of deer.

Summary

Late Woodland Ontario Iroquoian culture developed amidst the uncertainty of northern horticulture. The widespread introduction of beans by the 15th century, when combined with corn, may have resulted in the beginning of a trend toward the substitution of animal protein in

a diet that included a substantial quantity of low nutrition corn. With this development more effort could be directed toward other aspects of society if less time was being spent on male-oriented subsistence pursuits. Cultural advancement and elaboration may in part be related to the evolution of plant domestication.

Not only is northern horticulture an inherently unhealthy and hence maladaptive subsistence pursuit (cf. Pfeiffer and King 1983), but further stresses result when the stability of the horticultural base is undermined. Ontario Iroquoians attempted to adapt, a feat made easier by the flexibility of northern Iroquoian social organization. Like their hunter-gatherer ancestors and neighbours, during good times fusion into larger groups was possible, while during lean and other stressful times they could split into smaller groups or move to areas of new resources. While an increase in deer procurement may ultimately have become a successful subsistence adjustment to the restraints of a cooler and unstable climate, such an outcome was ultimately thwarted by the devastating effects of European epidemics. Native curing practices and the importation of captives to re-stock the population proved futile in the struggle to adapt to additional adversity. Attempting to combat famine, contagion, and Iroquois attacks while maintaining the basic necessities of life was too much to overcome, and by 1651 the decimated Iroquoian groups of southern Ontario succumbed.

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**LONDON CHAPTER, OAS
1991 Treasurer's Report**

		1991	1990
Balance on Hand, January 1		15,972.21	12,009.39
REVENUES			
	Membership Subscriptions	2,078.25	1,792.00
	US Premium, Bank Interest	3,216.05	1,380.65
	Grants (OHF Publication)	1,200.00	6,800.00
	Publication Sales	14,780.12	987.61
TOTAL REVENUE		21,274.42	10,960.26
EXPENSES			
	Publications (KEWA, OP #5,#6)	17,641.66	6,676.93
	Administration (including rent, phone, book launch, etc.)	5,665.98	51.25
	Projects (City Visions III)	200.00	269.26
TOTAL EXPENSES		23,507.64	6,997.44
	Excess of Revenue over Expense	-2,233.22	3,962.82
	Balance on Hand, December 31	13,738.99	15,972.21

Submitted by Harri Mattila, London Chapter, OAS Treasurer

October 17, 1992